

REMARKS

Claims 1-33 and 73-79 are pending in the application. Claims 1-20, 25, 28 and 30 are currently under consideration. Claims 21-24, 26, 27, 29 and 31-72 were withdrawn from consideration as being drawn to non-elected inventions. Claims 1-20, 25, 28 and 30 were rejected, but allowable subject matter was identified. Claims 34-72-20 are hereby cancelled, without prejudice, as directed to non-elected inventions. Claims 73-79 are added.

Information Disclosure Statement

The Examiner's remarks regarding the Chu et al. and EP 0111213A2 references are acknowledged and affirmed.

Specification

The objections to the disclosure are noted and the references to the various US patent applications have been updated by amendment as requested.

Claim Objections and Rejections under 35 U.S.C. §112

Claims 3 and 4 have been amended to address the noted objection and rejection under 35 U.S.C. §112, second paragraph. Support for the clarifying amendments to claims 3 and 4 can be found in the paragraph bridging pages 10 and 11, for example. Claim 12 has been amended as suggested by the Examiner.

Claims 18, 19 and 25 were rejected under 35 U.S.C. §112, first and second paragraphs, as failing to comply with the written description requirement and as indefinite. The claims have been amended to correct the clerical error "C₃N" noted by the Examiner to resolve the first paragraph issue. Claims 18 and 19 have been otherwise amended to recite a wider array of reaction products consistent with the scope of the disclosure, now that the reaction product of Li with Cu₃N has been indicated as allowable subject matter. It is the product, as recited in the claims, and not the reactants, that is claimed.

Clerical errors in the claims have been corrected where noted.

It is respectfully submitted that the scope of the affected claims is not narrowed by these amendments, but is merely clarified or altered. Withdrawal of the objection and rejections in view of these amendments is respectfully requested.

Claim rejections under 35 U.S.C. §102 and 103 and Allowable Subject Matter

Claims 1, 3-6, 8, 11, 12 and 15-21 are rejected under 35 U.S.C. §102(b) as being anticipated by US 5,314,765 to Bates (Bates '765). Claim 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over Bates '765 in view of either US 5,569,520 to Bates (Bates '520) or US 6,025,094 to Visco et al. (Visco). Claims 3 and 4 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bates '765 in view of US 5,338,625 to Bates (Bates '625). Claims 7, 20

and 28 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bates '765 in view of US 6,485,622 to Fu (Fu). Claims 9 and 10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bates '765. Claims 13 and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bates '765 in view of Fu. The indication in the Office Action that the elected species of the first material (the composite reaction product of Li with Cu_3N) constitutes allowable subject matter is gratefully acknowledged.

Without addressing the merits of the rejections at present, the claims have been amended to delete the recitation of Li_3N as a first material species in hopes of expediting prosecution and issuance of a patent for other allowable subject matter in the application. Since the pending claims no longer recite Li_3N as a first material, it is respectfully submitted that the §§102 and 103 rejections over Bates '765 are no longer applicable and their withdrawal is respectfully requested.

Further, independent claim 1 has been amended to more specifically recite the composition of the first material. The species indicated allowable (the composite reaction product of Li with Cu_3N) is a species of the newly recited composite reaction product of the active metal with a metal nitride. Support for this amendment of claim 1 is found, for example, at page 12, line 25 to page 13, line 6, and page 16, lines 12-26 where the reaction products of active metal and various precursors that react with Li to form a first material product are described and discussed, including the specific examples of P (red phosphorus), Cu_3N , SnN_x , Zn_3N_2 , FeN_x , CoN_x , aluminum nitride (AlN) and silicon nitride (Si_3N_4); and at page 19, lines 3-12 where the reaction of active metal (e.g., Li) with a wetting layer (e.g., Ag or Sn) coated on LiPON as the first material is described and discussed. It is respectfully submitted that the electrochemical device component as claimed with these first materials, which include the species already indicated allowable, is not taught or suggested by the prior art and is patentable. Dependent claims 18 and 19 have also been amended and claims 73-79 have been added to recite various more specific aspects of the claimed invention.

In addition to the patentability conferred by the various novel first material layer compositions of the claimed electrical device component, the second material layer in most of the described embodiments, LiPON (which is not recited in the claims under consideration) being the notable exception, has a fundamental and distinguishing physical property difference relative to previous anode protective layers. The second material layer in the present claims, while it is a highly ionically conductive electrolyte, is also highly reactive to lithium or other alkali (e.g., active) metal anode materials (see, e.g., Example 2; this point is also made in the contemporaneous literature (see e.g., the Weppner article from the Journal of the American Ceramic Society (2003) in which it is noted that ceramics of the type identified as a "second material" in the present application and are known to have high ionic conductivity, but are not suitable as electrolytes in solid-state batteries due, primarily, to their high degree of reactivity

with the anode lithium metal (paragraph bridging the columns on page 437, and Table I on page 438))). The invention addresses this problem by providing the first material layer between the second material and the anode and compatible with both.

None of the cited art references teach or suggest a workable lithium anode protective film comprising materials that are reactive to lithium.

Claim 1 has been amended to more clearly recite this aspect of the invention in hopes of more clearly distinguishing the claimed invention from the cited prior art.

Accordingly, the pending claims are respectfully submitted to be unobvious and patentable, and the rejections under 35 U.S.C. §103 are respectfully requested to be withdrawn.

Double Patenting

Claims 1-7, 15-20 and 28 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-12 and 14 of copending child Application No. 10/731,771. It is submitted that the present amendments to the claims pending in this application obviate this provisional statutory double patenting rejection since the claims in the two applications are no longer of the same scope. Applicants are committed to coordinating the prosecution of the noted applications to avoid statutory double patenting.

The provisional obviousness-type double patenting rejections in view of claims in the child and grandchild applications 10/731,771 and 10/772,228, respectively, are noted. Applicants propose to file Terminal Disclaimers in one or more of these applications, as appropriate, in order to obviate obviousness-type double patenting issues prior to the conclusion of prosecution.

Conclusion

Subject to the provision of an appropriate Terminal Disclaimer, as noted above, Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
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